# A Proposed Classification Scheme for Multi-Step Clinical Care Algorithms

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ABSTRACT

*While other works may have discussed what makes a good clinical algorithm, and even discussed the importance of good algorithms, there has not been a discussion of the classification of algorithms other than to say whether or not an algorithm meets the criteria to be called "good." This work presents a classification scheme that separates algorithms into five classes based on the level of detail present in the algorithm.*

## INTRODUCTION

Increasingly, clinical care algorithms are being computerized to serve many different roles: teaching tools, quality improvement / monitoring tools, research tools, and as part of routine clinical care. As computers have no native intelligence, it is necessary to make the algorithms as detailed as possible to both streamline the implementation process and try to ensure that the computerized algorithm represents what we want to do, not just want we told the computer to do.

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## CLASSIFICATIONS

**Class 0**

Class 0 algorithms are often encoded only in textual form. These algorithms are usually full of the vagaries necessary to get a document through the consensus process and fail to adequately describe the decisions and actions that are required to care for the patient. The actual algorithm is often unstructured or poorly structured and may follow no sequential order based on either time or logical progression of a pathology or treatment course. Important entry or exclusion criteria and conditional values often appear at the end of the algorithm or in footnotes, if at all.

**Class 1**

Class 1 algorithms improve upon Class 0 algorithms by specifying all of the entry and exclusion criteria at the beginning of the algorithm description. The algorithms steps are coarsely structured and are arranged in a temporal or logical progression. These algorithms are usually still represented in textual form, but may also be represented in other forms.

**Class 2**

Class 2 algorithms improve upon Class 1 algorithms by explicitly defining all thresholds and decisions within the algorithms. Some action steps are also defined.

**Class 3**

Class 3 algorithms are distinguished from Class 2 algorithms by the representation format and the presence of definitions for all steps. Class 3 algorithms are represented using some structured formalism, such as flow diagrams or formal, structured text (pseudo-code).

**Class 4**

Class 4 algorithms include all of the details necessary for a non-expert or computer to negotiate the algorithm in a reliable and repeatable manner. All logical and clinical concepts are explicitly spelled out and are described in terms of patient-specific values. These algorithms are most often disseminated as either flow diagrams or encoded using a knowledge base formalism.

As it is possible for a given clinical algorithm to fulfill all of the requirements for a given classification and part of the requirements for a higher classification, it may be necessary to classify the algorithm as a intermediate value. This is done by separating the two levels with a forward slash (/), such as, "Class 3 / 4". This notation, while less precise than a decimal or true fractional notation, has the advantage of being simple and efficient.

References

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